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Internet-delivered cognitive behavioural therapy with and without an initial face-to-face psychoeducation session for social anxiety disorder: A pilot randomized controlled trial

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ABSTRACT

Background: Guided Internet-delivered cognitive behavioural therapy (ICBT) is an effective treatment of social anxiety disorder (SAD). However, the treatment is not effective for all. The amount and type of therapist contact have been highlighted as a possible moderator of treatment outcome.
Objective: The aim of this study was to examine whether treatment effects of ICBT are enhanced with an initial 90 min face-to-face psychoeducation (PE) session for university students with SAD.
Method: University students with SAD ($N = 37$) were randomized into one out of two conditions: 1) an initial therapist-led face-to-face PE session followed by guided ICBT, 2) guided ICBT without an initial PE session. Data was analysed with an intent-to-treat approach.
Results: Eight participants (21.6%) dropped out of treatment. A statistically significant reduction in symptoms was found for all outcome measures for both groups. There were no significant additional effects of adding the initial face-to-face PE. Moderate to large within-group effect sizes on self-rated social anxiety symptoms were found at post-treatment ($d = 0.70$–0.95) and at a six month follow-up ($d = 0.70$–1.00). Nearly half of the participants were classified as recovered.
Conclusions: Notwithstanding limitations due to the small sample size, the findings indicate that guided ICBT is an effective treatment for students with SAD. Adding an initial face-to-face PE session to the guided ICBT did not lead to enhanced outcomes in the present study.

1. Introduction

Social anxiety disorder (SAD) is the most frequent anxiety disorder with a lifetime prevalence of 12–14% (Kessler et al., 2005; Kringlen et al., 2001). Considering the negative impact of anxiety disorders on well being and quality of life (Mendlowicz and Stein, 2000), and the economic burden on the society (Smit et al., 2006), it is important to provide adequate health care interventions at an early stage. Population-based surveys, however, indicate that more than half of those with anxiety symptoms may never seek treatment (Roness et al., 2005; Wang et al., 2005), and only a few get evidence-based treatment (Shafran et al., 2009).

Guided Internet-delivered cognitive behavioural therapy (ICBT) has been shown to be an effective treatment for a variety of anxiety disorders (e.g. Haug et al., 2012; Hedman et al., 2012), including SAD (Andersson et al., 2006; Boettcher et al., 2013; Carlbring et al., 2007; Furmark et al., 2009; Hedman et al., 2014). Patients also consider guided ICBT to be a credible and suitable alternative to face-to-face treatment (Gun et al., 2011; Mohr et al., 2010; Spence et al., 2011; Wootton et al., 2011). However, some patients do not improve from ICBT and an average of 31% drop out of treatment (Melville et al., 2010). It is therefore important to identify factors related to improved outcomes from ICBT. Increased therapist contact is suggested as a factor that may enhance treatment effects (Palmqvist et al., 2007; Haug et al., 2012).

The question about what constitutes the optimal amount and modes of therapist contact (e.g. e-mail, telephone, face-to-face meetings) has been addressed in several studies (e.g. Andersson et al., 2006;

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Carlbring et al., 2006; Carlbring et al., 2007). The findings in these studies support the use of guided ICBT but give no clear indication on what might be the optimal way of providing therapist guidance. The degree of therapist support has been examined on ICBT for other disorders (Johansson and Andersson, 2012) but little work has been done on the effects of support on ICBT for SAD specifically. Boettcher et al. (2012) examined whether an initial diagnostic interview would increase treatment effects and found no effect on their primary SAD outcomes. Also Titov et al. (2010) compared ICBT with and without motivational enhancement strategies. This included lessons in managing ambivalence, developing and resolving discrepancy between values and symptoms and enhancing self-efficacy for change. Although there were less drop-outs in the motivationally enhanced group, there were no between-group differences in outcome measures at the end of treatment or at the 3 month follow-up.

Psychoeducation interventions based on CBT-principles as a stand-alone treatment have been found to significantly reduce symptoms for anxiety, depression, and psychological distress, but with small effect sizes (Donker et al., 2009; Rummel-Kluge et al., 2009). Psychoeducation interventions usually consist of information about the development and maintenance of a particular mental disorder, the principles behind the treatment of that disorder, and suggestions for coping strategies. In accordance with the arguments that therapist support is a critical component in ICBT treatments (Johansson and Andersson, 2012), psychoeducation is thought to be a common factor that may enhance the patient's experience of accountability to the therapy and the therapist (Newman et al., 2003), stimulating the development of the therapeutic alliance (Horvath and Luborsky, 1993), and facilitate the process of entering a change promoting role (Ogrodniczuk et al., 2005). All together, these factors are thought to increase satisfaction, use, and treatment outcome among patients seeking help for anxiety disorders (Taylor et al., 2012). One can argue that while the ICBT treatment offers psychoeducation as a part of its treatment, it does not add the same gravitas and accountability as a face-to-face psychoeducation. Thus, the aim of the present study was to examine whether an initial face-to-face psychoeducation session would enhance outcomes and reduced drop-out in guided ICBT for SAD.

2. Method

2.1. Procedure

A total of 37 students with SAD were included in the study, and randomized to the psychoeducation + ICBT condition ($n = 17$) or the ICBT only condition ($n = 20$). Participants were recruited at the Student Psychological Health Services, a low-threshold psychological service where students at the University of Bergen can self-refer for treatment. The SPH does not required student to fulfil diagnostic criteria for a mental disorder to receive treatment, and they are not excluded from treatment if they do. Possible participants were screened for SAD and those who affirmed at least two of the three main screening questions for SAD in the Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 2009) were informed about the study and invited to the face-to-face inclusion assessment. To be included, participants had to fulfil the following inclusion criteria: a) between 18 and 65 years of age; b) fulfilling MINI criteria for SAD for at least one month; c) SAD as the primary psychological disorder; d) a Clinician Severity Rating (Brown et al., 1994) score of at least 3, indicating a severity which warrants a diagnosis (Brown et al., 2001); e) willingness to be randomized; f) Internet access; g) a signed written informed consent. Exclusion criteria were: a) major reading difficulties; b) in immediate need of other treatment; c) drugs or alcohol dependence syndrome; d) regular use of benzodiazepines; e) psychosis, major depressive disorder, or suicidal ideation. Use of selective reuptake inhibitors was accepted, if medication had been stable over the last three months and the patient was willing to remain stable during the intervention period. Previous psychological treatment, including CBT and exposure treatment, was not an exclusion criterion but ongoing psychological treatment was.

Participants were randomized to one out of two treatment conditions: 1) psychoeducation + ICBT: a therapist-led face-to-face 90 min psychoeducation session before starting guided ICBT or 2) ICBT: guided ICBT without an initial psychoeducation session. The therapists who delivered the psychoeducation also administrated assessment and guided their respective patients through the ICBT programme. Both conditions had a weekly 10 min telephone contact during the ICBT intervention. The randomisation was done by an online true random-number service.

Participants were assessed at pre-treatment, post-treatment, and at 6 months follow-up. The Social Phobia Scale (SPS; Mattick and Clarke, 1998) was administrated via Internet after the third and sixth module. Participation in the study was based on written, informed consent. The Regional Committee for Medical and Health Research Ethics, Western Norway, approved the study.

2.2. Treatment

2.2.1. Psychoeducation session

The psychoeducation session lasted 90 min, comprising an introduction to the cognitive, physical, emotional, and behavioural symptoms of SAD. During this session the therapist and the patient made use of the CBT model for SAD (Clark and Wells, 1995) in order to understand the symptoms of the patient. In addition, the participant was given advice to change focus from themselves to their environment as well as general advice on how to master the physical symptoms that accompany anxiety. At the end of the session, the participants were given a leaflet with a brief summary of the topics covered in the session.

2.2.2. Guided ICBT

The ICBT-programme for SAD was developed in Sweden and has been used in several randomized controlled clinical trials (e.g. Andersson et al., 2006; Andersson et al., 2012; Carlbring et al., 2006, 2007; Furmark et al., 2009) and has been shown to be effective in routine care (El Alaoui et al., 2015). It has also been demonstrated to be as effective as cognitive behavioural group therapy (Hedman et al., 2011). The programme is informed by Clark and Wells' (1995) cognitive model for SAD. Professional translators and psychologists translated the programme into Norwegian. The nine modules comprised written information about central symptoms of SAD, the etiological and maintaining factors of these symptoms, and how to change these. Main themes in the modules were identifying and changing negative thought patterns, improving information processing in social situations, identifying and reducing safety behaviours, mastering physical anxiety symptoms, and social exposure (Andersson et al., 2006).

At the end of each module, patients were given homework assignments, i. e. setting goals for treatment recording thoughts, feelings, and behaviour, and to plan and evaluate behavioural experiments. Participants were recommended to spend 4–6 h working on the programme each week.

2.2.3. Therapist support

Due to Norwegian legislation at the time of development of the web-platform (2007) no online storage of sensitive information or electronic was included. Therefore, guidance was provided in pre-scheduled weekly phone call from their therapist, in line with procedures used by Carlbring et al. (2007). The phone call was expected to last around 10 min and therapists were instructed to answer questions about the current module or the treatment in general and to encourage progress and completion.

The therapists ($N = 6$) were clinical psychologists (female = 4), all certified specialists with between 5 and 15 years of experience in psychological treatment of students. The therapists attended a one-day workshop focusing on information about the ICBT-programme and

worked on the basic principles for the psychoeducation session and the phone calls.

2.3. Measures

2.3.1. Primary outcomes

We used the Social Phobia Scale (Mattick and Clarke, 1998), a questionnaire comprising 20 items rated on a 0 to 4 scale. This assesses fears of being scrutinized or observed by others during routine activities, e.g. eating, writing or speaking in public. This was complemented with the Social Interaction Anxiety Scale (SIAS; Mattick and Clarke, 1998). This questionnaire contains 20 items rated on a 0 to 4 scale, assessing anxiety related to interactions with others, e.g. initiating and maintaining conversations. Both measures has shown adequate psychometric properties with online administration (Hedman et al., 2010).

2.3.2. Secondary outcomes

Beck Depression Inventory (BDI; Beck et al., 1961) was used to assess self-reported symptoms of depression, comprising 21 items rated on a 1 to 4 scale. The following cut-off scores were used to define depressive status: 0–9 no or minimal depression, 10–18 mild depression, 19–29 moderate depression, 30–63 severe depression (Beck et al., 1988).

The Inventory of Interpersonal Problems (IIP-64; Horowitz et al., 1988) was used to measure interpersonal problems. This questionnaire has 64 items rated on a 0 to 4 scale.

2.3.3. Treatment satisfaction

Patient's evaluations of treatment outcome and treatment satisfaction were assessed by a short descriptive survey of general attitudes towards the treatment, the therapist and overall satisfaction with the treatment (Havik et al., 1995). There were also open-ended questions where participants could write freely.

2.4. Statistical analysis

All statistical analyses were performed with SPSS Statistics 21.0.0.

Differences between the two treatment conditions on patients' characteristics, satisfaction, adherence, and drop-out were assessed using *t*-tests for independent samples and χ^2-tests. Levene's test for unequal variances was used to check for homoscedasticity and Fishers exact test was used when comparing comorbidity between treatments conditions, as the sample sizes were too small for χ^2-tests.

Treatment effects were analysed using a linear mixed-effect model fitted with maximum likelihood method (ML), recommended for its ability to handle missing data and reducing risk of committing type I errors (Hesser, 2015). Using information criteria comparisons, we decided on an unstructured covariance structure with the effect of time (Time), treatments conditions (Group) and interaction (Time × Group) set as fixed effects. This solution accommodates degree of model fit with the issue of over parameterisation (Verbeke and Molenberghs, 2009). With an unstructured covariance structure it is assumed that covariances are unpredictable and do not conform to any systematic pattern. ML determines population values by maximizing the probability of finding the observed sample data, given the current parameter estimated (Heck et al., 2013). Likelihood-based repeated measures analysis generally outperforms traditional methods like last observation carried forward in accounting for dropout bias (Mallinckrodt et al., 2001). The linear mixed-effect model allows for repeated measures (level 1) to be nested within each individual (level 2) which allows the model to assume non-independence with repeated data. Linear mixed-effect models also allow for the inclusion of all available data, making this an intent-to-treat analysis (Mazumdar et al., 1999). Our model treated time as a three stage construct, with pre-, post-, and follow-up measures, except for SPS that was administered during treatment after module 3 and 6, making it a five stage construct.

Within-group effect sizes were calculated as Cohen's *d* using $(M_{pre} - M_{post})/SD_{pre}$, and between-group effect sizes were calculated using $(M_{post} - M_{post})/SD_{Pooled}$. Effect sizes were classified as small: 0.20, medium: 0.50, large: 0.80 (Cohen, 1988).

Clinical significant changes on the SPS and the SIAS were estimated by combining the Reliable Change Index (RCI: Lambert et al., 1983) and the cut-off score for clinical significant change recommended by Heimberg et al. (1992): SPS ≤ 24, SIAS ≤ 34. RCI represents the degree of individual change needed to conclude that a score is unlikely to be an artefact of the unreliability of the measure at a $p < .05$ level. RCI for the two primary outcome measures used in this study were SPS = 9.72 and SIAS = 8.41, respectively. Using Lamberts and Ogles (2009) criteria, participants were classified as having a clinical significant change on a particular outcome measure if the difference between the pre- and post-treatment score was reliable and the post score had become lower than the cut-off score. In the intention-to-treat analysis of clinical significant change we replaced missing data at post-treatment with an unchanged status. One participant without post or follow-up data provided data at module six. This data was used to assess individual change as this participant had completed the majority of the programme.

3. Results

3.1. Dropout

Eight participants (8/37, 21.6%) failed to provide neither post-treatment nor follow-up data and were considered dropouts. All other participants (29/37, 78.4%) had a minimum of two assessment points. A total of 14 (14/37, 37.8%) participants did not complete the post-treatment assessment (ICBT $n = 7$, 35.0%, PE + ICBT $n = 7$, 41.1%) and 16 (16/37, 43.2%) did not complete the follow-up (ICBT $n = 9$, 45.0%, PE + ICBT $n = 7$, 41.1%). There were no significant differences between participants with post or follow-up data ($n = 29$) and dropouts ($n = 8$) on socio-demographic characteristics, comorbid disorders, previous treatment, or baseline scores on the primary outcome measures ($p = .07$–$.75$).

3.2. Study sample

See Table 1 for study sample characteristics. For a consort of the patient flow, see Fig. 1.

Table 1
Participants.

	Total		PE + GICBT		GICBT				
	N/M	*SD/%*	*n/M*	*SD/%*	*n/M*	*SD/%*	F/χ^2	*df*	*p*
Female	16	43.2	7	41.2	9	45.5	.05	1	.81
Age (yrs)	25.6	6.5	23.7	3.4	27.3	8.1	1.73	35	.09
Years at the university	3.2	2.8	2.9	2.8	3.4	2.6	.46	35	.64
Having a romantic relationship	20	54.1	8	47.1	12	60	.62	1	.68
Illness History									
Duration of illness (year)	10.9	9.5	8.4	4.6	12.7	11.7	1.40	35	.16
Previous psychotherapy	13	35.1	6	35.3	7	35	.07	1	.78
Used medication	9	24.3	4	23.5	5	25	.11	1	.73
Comorbidity									
Major depressive episode[a]	3	8.1	2	11.8	1	5	.56	1	.58
Panic disorder[a]	8	21.6	6	35.3	2	10	3.47	1	.11
Agoraphobia[a]	12	32.4	6	35.3	6	30	.12	1	1.00
Generalized anxiety disorder[a]	8	21.6	6	35.3	2	10	3.47	1	.11
GAD or PD[a]	12	32.4	8	47.1	4	20	3.07	1	.16
Any comorbidity[a]	17	45.9	9	52.9	8	40	.62	1	.52

Note: PE = psychoeducation, GICBT = Guided Internet Cognitive Behavioral Therapy.
[a] Fisher exact test.

3.3. Modules completed

Participants completed on average 6.8 modules (range 0–9), with 69% completing module 6 or more ($n = 32$). Participants who attended the post-treatment interview ($n = 23$) reported spending about 3 h each week on the programme ($M = 3.1$, $SD = 1.7$, range: 0.5–7.0), and completed on the average 7.6 modules ($SD = 2.6$, range: 1–9). There were no significant differences between the treatment conditions on the average time spent on the programme, $t(21) = -1.28$, $p = .21$, or the average number of modules completed, $t(21) = 0.86$, $p = .39$.

3.4. Primary outcomes

In the linear mixed-effect model, a statistically significant main effect of Time was observed on the primary outcome measures (see Table 2). Self-reported SAD symptoms showed a moderate to large within group effects at post-treatment (SPS $d = 0.95$, SIAS $d = 0.70$). A similar main effect of Time was found at the follow-up for both measures (SPS $d = 1.00$, SIAS $d = 0.77$), and the post-treatment to follow-up changes were not significant on neither SPS ($p = .68$) nor SIAS ($p = .94$).

In contrast, no main effects of Group on the primary outcome measures (SPS $p = .98$; SIAS $p = .52$) or interaction effects of Time × Group (SPS $p = .28$, SIAS $p = .34$) were identified.

3.5. Secondary outcomes

The secondary outcome measures showed the same pattern as the primary outcome measures: statistically significant main effects of Time and no significant effects for Group or Group × Time interaction (see Table 2). At the post measurement the within group effect size for depressive symptoms was moderate ($d = 0.74$), whereas the effect on interpersonal problems was large ($d = 0.94$).

The average score on the IIP were maintained from post to the follow-up ($p = .48$). The average score on BDI showed a non-significant increase in depressive symptoms when comparing post measurements ($M = 7.88$, $SD = 7.54$) with the follow-up ($M = 9.78$, $SD = 8.21$, $p = .11$).

3.6. Clinical significant change

In order to calculate clinical significant change on SIAS and SPS, we used assessment data from the post-treatment assessment ($n = 23$).

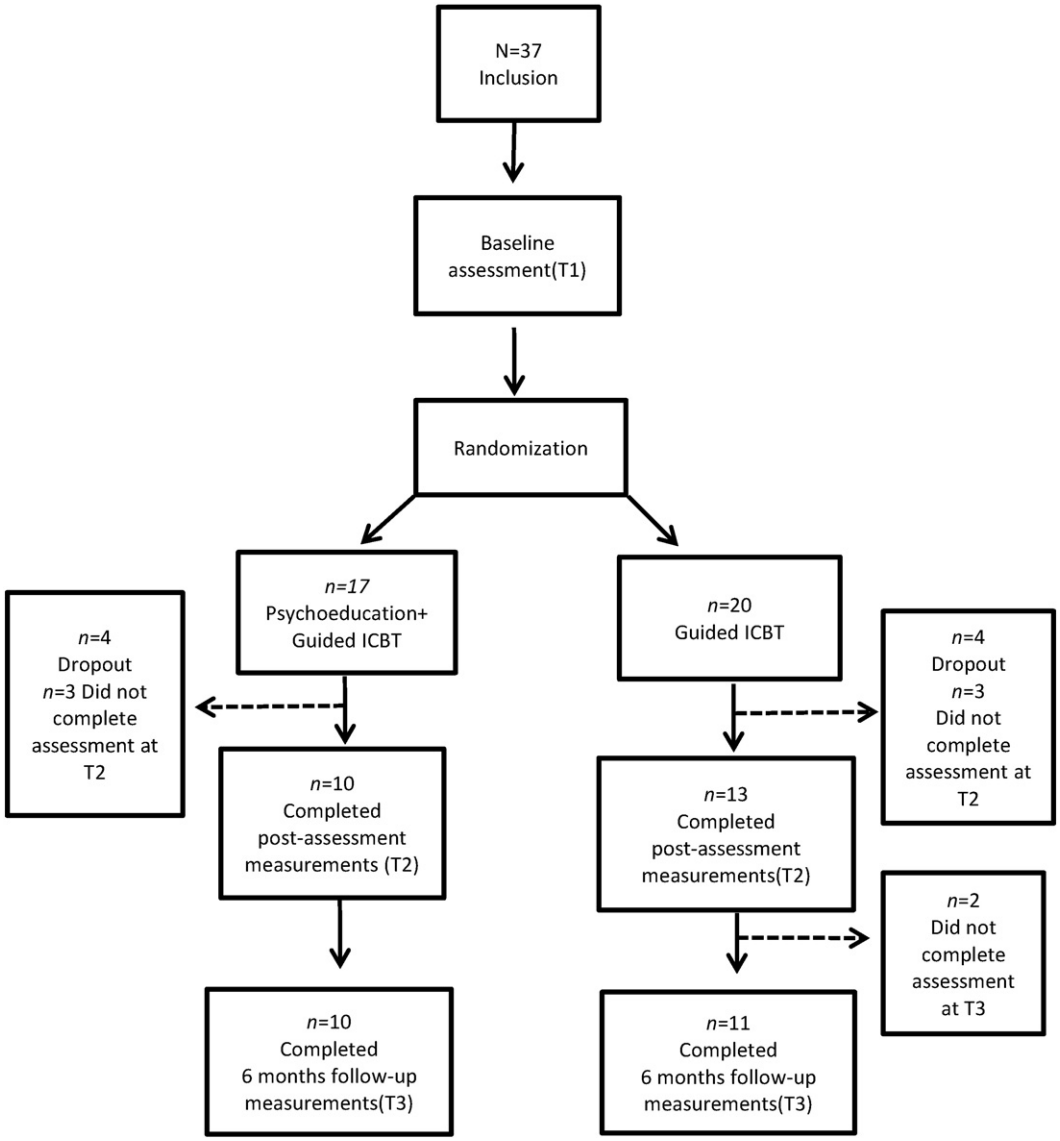

Fig. 1. Flowchart.

Table 2
Primary and secondary outcome measures.

	PE + GICBT			GICBT			Total			Linear mixed models	
	M [95% CI]	*SD*	ES_w	*M* [95% CI]	*SD*	ES_w	*M* [95% CI]	*SD*	ES_w	Effect	*p*
Social Phobia Scale											
Pre	37.35 [29.60–45.10]	15.70		39.17 [30.03–44.32]	15.69		37.26 [31.99–42.53]	15.75		Group	.98
Post	21.91 [14.54–29.27]	14.80	0.98	22.45 [15.73–29.17]	14.62	1.06	22.18 [17.19–27.16]	14.72	0.95	Time	<.001
Follow-up	22.63 [16.19–29.06]	12.90	0.93	20.22 [14.28–26.17]	12.92	1.20	21.42 [17.04–25.81]	12.95	1.00	G × T	.28
Social Interaction Anxiety Scale											
Pre	40.64 [34.55–46.74]	12.36		41.41 [35.79–47.03]	12.38		41.03 [36.88–45.17]	12.40		Group	.52
Post	34.02 [26.11–47.93]	15.91	0.53	30.59 [23.53–37.65]	15.38	0.87	32.30 [27.00–37.61]	15.69	0.70	Time	<.001
Follow-up	33.76 [27.64–39.88]	12.28	0.55	29.12 [23.26–34.99]	12.79	0.99	31.44 [27.20–35.68]	12.53	0.77	G × T	.34
Beck Depression Inventory											
Pre	13.47 [10.08–16.86]	6.88		12.50 [9.37–15.62]	6.84		12.98 [10.68–15.29]	6.87		Group	.74
Post	7.98 [4.23–11.74]	7.62	0.79	7.78 [4.38–11.17]	7.46	0.69	7.88 [5.35–10.41]	7.54	0.74	Time	<.001
Follow-up	10.32 [6.30–14.34]	8.16	0.45	9.24 [5.50–12.99]	8.27	0.47	9.78 [7.03–12.53]	8.21	0.46	G × T	.84
Inventory of Interpersonal Problems											
Pre	1.59 [1.40–1.78]	0.37		1.37 [1.20–1.55]	0.35		1.48 [1.35–1.61]	0.36		Group	.36
Post	1.17 [0.88–1.46]	0.57	1.13	1.12 [0.86–1.37]	0.53	0.71	1.14 [0.95–1.34]	0.54	0.94	Time	.01
Follow-up	1.23 [0.96–1.51]	0.53	0.97	1.14 [0.87–1.40]	0.58	0.65	1.19 [0.99–1.38]	0.54	0.80	G × T	.70

Note. ($N = 37$).
p values are given for linear mixed models using estimates from pre-treatment, post-treatment, and 6 months follow-up. The *p* value associated with the main effect of group denotes significance of average difference between treatment conditions. The *p* value associated with the effect of time denotes the significance of average change over all assessment periods across time. The *p* value associated with the effect of G × T (group × time) denotes significance of difference between the groups in change over all assessment periods. ES_w = within effect size Cohen's $d = M_1 - M_2/SD_{pre}$. PE + GICBT = psychoeducation + Guided Internet Cognitive Behavioral Therapy, GICBT = Guided Internet Cognitive Behavioral Therapy.

For participants who did not complete the post-treatment assessment we used data from the follow-up assessment ($n = 6$). If a participant did not supply post nor follow-up measurement, then during-treatment data from module six was analysed ($n = 1$). This was only available on the SPS. Clinical significant change was calculated for $n = 30$ on SPS and $n = 29$ participants on SIAS. A Fishers exact test was used to determine if the proportion of participants with clinical significant change differed when we used follow-up data ($n = 6$) in the absence of post-data. This did not show a statistically significant difference on the SPS ($p = .36$) or SIAS ($p = .63$).

A total of 14 of 30 (48.3%) fulfilled Lambert and Ogles (2009) criteria for recovery on SPS, i.e. having both a positive reliable change from pre- to post-treatment and the post-treatment score was below the cut-off point recommended by Heimberg et al. (1992). On the SIAS, 13 of 29 (44.8%) participants fulfilled the criteria for recovery.

One participant showed deterioration, i.e. a negative reliable change on the SIAS. None of the participants showed deterioration on the SPS (Table 3).

In the intention-to-treat analysis of clinical significant change the total clinical significant change is 37.8% (14/37) on the SPS and 35.1% (13/37) on the SIAS.

3.7. Treatment satisfaction

Overall, the participants ($n = 23$) who attended the face-to-face post assessment interview reported being satisfied with the ICBT-programme, giving an average score of $M = 4.8$ ($SD = 0.8$) on a scale where 1 = not satisfied at all, 6 = very satisfied. There were no significant differences between the treatment conditions on satisfaction with the programme, $t(21) = .090$, $p = .92$. None of the participants who attended the post assessment interview reported being dissatisfied and only three (13.0%) reported that they would have liked more interaction with a therapist.

4. Discussion

The main finding in this study was a significant reduction of social anxiety symptoms in students with SAD during the treatment, showing moderate to large effect sizes on the primary outcome measures. Moderate effects were found on the secondary outcomes of depressive symptoms and interpersonal problems. All effects were maintained at the follow-up. The effects were maintained at follow-up. We found no effects of group, or interaction between group and time in any of our outcomes, indicating that there was no added effect of the face-to-face psychoeducation. Estimates of clinical significant changes at the individual level indicated nearly half of the participants who completed the treatment had recovered.

We chose to define dropouts based on whether the participant responded to assessments either at the end of their treatment, or at the follow-up. Overall the dropout from this study was comparable to similar studies (Christensen et al., 2009). We did not assess non-usage attrition as defined by Eysenbach (2005). The main reason for this is that closely monitoring programme usage would be in conflict with Norwegian health information laws.

To summarize, the present findings on the effects of ICBT on SAD are in line with those reported from other studies (e.g. Andersson et al.,

Table 3
Clinical significant change among completers.

	Clinical significant change					
	SPS ($n = 30$)			SIAS ($n = 29$)		
Improvement	CS−	CS+	Total	CS−	CS+	Total
Reliable change	6 (20.0%)	14 (48.3%)	20 (66.7%)	2 (6.9%)	13 (44.8%)	15 (51.7%)
Unchanged	4 (13.3%)	6 (20.0%)	10 (33.3%)	6 (20.7%)	7 (24.1%)	13 (44.8%)
Deteriorated	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)	1 (0.03%)
Sum	10 (33.3%)	20 (66.6%)	30 (100%)	9 (31.0%)	20 (68.9%)	29 (100%)

Note. CS− = final score was above cutoff for social anxiety disorder. CS+ = final score was below cutoff for social anxiety disorder.

2006 [$d = 0.87$]; Carlbring et al., 2006 [$d = 0.88$]; Carlbring et al., 2007 [$d = 1.07$]; Furmark et al., 2009 [$d = 0.85$–0.98]). Starting the ICBT treatment with a face-to-face psychoeducation session had no significant impact on outcome, satisfaction, or completion of the programme. However, supplementing an initial psychoeducation session did not enhance treatment effects. This is in line with the study by Boettcher et al. (2012) who found no enhancement of treatment effects when adding a face-to-face diagnostic interview to an ICBT programme for SAD. Our results are also similar to Tillfors et al. (2008) who did not find an increased effect when comparing an ICBT group with added live exposure groups and a pure ICBT programme for SAD. These results suggest that ICBT does well as a stand alone intervention with minimal therapist support. This is further indicated by Titov et al. (2010) who found that adding extra motivation enhancement to an ICBT programme for SAD did not change the outcome.

The lack of significant differences in outcome, satisfaction, and dropout between the two treatment conditions indicates that the initial psychoeducation session with a therapist did not have the expected effect. There might be several explanations for this finding.

Firstly, a psychoeducation session before starting guided ICBT may be an intervention that is too weak to have an effect on outcome measures over and above only guided ICBT. While psychoeducation is found to have an impact on anxiety symptoms (Rummel-Kluge et al., 2009), it is already an integrated part of many self-help treatments (Cuijpers and Schuurmans, 2007), with the present ICBT-programme being no exception (Andersson et al., 2006). It bears mentioning that the ICBT psychoeducation is a static and "generalized" version when compared to the face-to-face psychoeducation. Here, therapists were explicitly told to individualize Clark and Wells (1995) model to fit with participants idiosyncrasies. However, the tailoring of general themes into the participant's specific condition was a large part of the telephone guidance. Thus, there may have been too few differences between the two conditions.

Secondly, we expected that adding more of "the human touch" would have an impact on adherence, completion, and improvement. With an extra 90 min psychoeducation session, the psychoeducation condition doubled the total amount of therapist contact compared to the standard ICBT condition, which only included the screening interview and brief weekly telephone contact. However, there were no such differences between the conditions, in line with recent findings that therapist contact may be unrelated to outcome in guided ICBT (Haug et al., 2012). Haug et al. (2012) argued that this may be due to confounding factors, such as the impact of giving a rationale for therapy, providing explanations of symptoms and hope for improvement, and making the patient active in the treatment process — all elements well incorporated in the ICBT-programme used in this study. In addition, there was a degree of therapist contact in all experimental conditions, as the diagnostic interviews were face-to-face. This may have weakened the effect of the psychoeducation. There is evidence suggesting that any contact between therapist and patient is better than no contact (Baumeister et al., 2014). Perhaps a face-to-face psychoeducation would ameliorate unguided ICBT programmes without a face-to-face diagnostic interview, but not programmes with these elements included.

Thirdly, the study sample consisted of help-seeking students, motivated for guided ICBT. This may have masked the possible effects of a psychoeducation session. Likewise, it is possible that socially anxious patients, perhaps struggling with being evaluated by authorities, might not benefit as much from therapist contact as other patient groups. This is supported with research suggesting that social anxiety patients in guided self-help benefits from the "safe environment" in front of a computer, facilitating the necessary learning of CBT-foundations before initiating in-vivo social exposure (Andersson, 2009).

Recently there has been an increase in the recognition of potential negative effects in psychological treatments in general (Linden, 2013), including internet interventions (Rozental et al., 2014). This study did not target potential negative effects specifically but through our analysis of reliable change at the participant level we identified one instance of deterioration in one of our outcome measures. This participant did not show deterioration on any other outcome measure.

A common assumption is that ICBT is only effective for young and well-educated individuals (e.g. students), even though this assumption has not been supported in recent meta-analyses (Haug et al., 2012). The participants were relatively young ($M = 25.6$, $SD = 6.5$) when compared to similar RCT's of ICBT interventions for social anxiety (i.e. Carlbring et al., 2012). Although age has been suggested to moderate the outcome of ICBT trials (Karyotaki et al., 2015), research does not support this hypothesis (Nordgreen et al. 2012).

4.1. Limitations

The study sample was small, resulting in insufficient power to detect small to medium effects (Cohen, 1988) between the two groups. This is particularly significant given that interventions based solely on psychoeducation are reported to produce small effects (Donker et al., 2009).

Also, patients that are recruited from community samples often yield significantly better results from treatment than patients from clinical settings (Haug et al., 2012). This has been used as an argument for these studies having low generalizability. However, given that one of the main targets for ICBT is to provide health care for those who do not necessarily need face-to-face treatment, studies using community samples are still highly relevant. Self-referred samples in the treatment of mental disorders have also become the norm in some health care systems (e.g. Improved Access to Psychological Therapies in the United Kingdom; Clark, 2011).

Lastly, it should be mentioned that the same therapist conducted the assessment interview, psychoeducation session, and the telephone contact, increasing the possibility of biased assessment and ratings of improvement. Our analysis of satisfaction is based on participants who attended the post-assessment interview. Thusly, dissatisfied participants might not have attended the post-assessment interview, potentially biasing these results.

5. Conclusion

The results of this study support the use of guided ICBT for students with SAD, and indicate little or no impact of adding an initial psychoeducation session with a therapist. These findings are relevant from a health services point of view considering that many patients never receive adequate treatment for their anxiety disorders (Wang et al. 2005) and accumulating evidence showing that Internet based interventions are both practical and effective (Andrews et al., 2015). The exact nature and procedures of these interventions are still a topic for debate. The results in this paper shed some light on this issue as adding a therapist-led face-to-face intervention did not enhance treatment effects.

Disclosure statement

The authors declare that there are no conflicts of interest.
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References

Andersson, G., 2009. Using the internet to provide cognitive behaviour therapy. Behav. Res. Ther. 47, 175–180. http://dx.doi.org/10.1016/j.brat.2009.01.010.

Andersson, G., Carlbring, P., Holmström, A., Sparthan, E., Furmark, T., Nilsson-Ihrfelt, E., ... Ekselius, L., 2006. Internet-based self-help with therapist feedback and in-vivo group exposure for social phobia: a randomised controlled trial. J. Consult. Clin. Psychol. 74, 677–686. http://dx.doi.org/10.1037/0022-006X.74.4.677.

Andersson, G., Carlbring, P., Furmark, T., on behalf of the SOFIE Research Group, 2012. Therapist experience and knowledge acquisition in internet-delivered CBT for social anxiety disorder: a randomized controlled trial. PLoS One 7 (5), e37411. http://dx.doi.org/10.1371/journal.pone.0037411.

Andrews, G., Newby, J.M., Williams, A.D., 2015. Internet-delivered cognitive behavior therapy for anxiety disorders is here to stay. Curr. Psychiatry Rep. 17 (1), 1–5. http://dx.doi.org/10.1007/s11920-014-0533-1.

Baumeister, H., Reichler, L., Munzinger, M., Lin, J., 2014. The impact of guidance on internet-based mental health interventions — a systematic review. Internet Interv. 1, 205–215. http://dx.doi.org/10.1016/j.invent.2014.08.003.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., Erbaugh, J., 1961. An inventory for measuring depression. Arch. Gen. Psychiatry 4, 561–571. http://dx.doi.org/10.1001/archpsyc.1961.01710120031004.

Beck, A.T., Steer, R.A., Carbin, M.G., 1988. Psychometric properties of the Beck depression inventory: twenty-five years of evaluation. Clin. Psychol. Rev. 8, 77–100. http://dx.doi.org/10.1016/0272-7358(88)90050-5.

Boettcher, J., Berger, T., Renneberg, B., 2012. Does a pre-treatment diagnostic interview affect the outcome of internet-based self-help for social anxiety disorder? A randomized controlled trial. Behav. Cogn. Psychother. 40, 513–528. http://dx.doi.org/10.1017/S1352465812000501.

Boettcher, J., Carlbring, P., Renneberg, B., Berger, T., 2013. Internet-based interventions for social anxiety disorder-an overview. Verhaltenstherapie 23, 160–168. http://dx.doi.org/10.1159/000354747.

Brown, T.A., Di Nardo, P.A., Barlow, D.H., 1994. Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV). Psychological Corporation/Graywind Publications Incorporated, San Antoni, TX.

Brown, T.A., Di Nardo, P.A., Lehman, C.L., Campbell, L.A., 2001. Reliability of DSM-IV anxiety and mood disorders: implications for the classification of emotional disorders. J. Abnorm. Psychol. 110 (1), 49–58. http://dx.doi.org/10.1037/0021-843X.110.1.49.

Carlbring, P., Furmark, T., Steczkó, J., Ekselius, L., Andersson, G., 2006. An open study of internet-based bibliotherapy with minimal therapist contact via email for social phobia. Clin. Psychol. 10 (1), 30–38. http://dx.doi.org/10.1080/13284200500378662.

Carlbring, P., Gunnarsdottir, M., Hedensjö, L., Andersson, G., Ekselius, L., Furmark, T., 2007. Treatment of social phobia: randomised trial of internet-delivered cognitive behaviour therapy and telephone support. Br. J. Psychiatry 190, 123–128. http://dx.doi.org/10.1192/bjp.bp.105.020107.

Carlbring, P., Apelstrand, M., Sehlin, H., Amir, N., Rousseau, A., Hofmann, S.G., Andersson, G., 2012. Internet-delivered attention bias modification training in individuals with social anxiety disorder—a double blind randomized controlled trial. BMC Psychiatry 12, 66. http://dx.doi.org/10.1186/1471-244X-12-66.

Christensen, H., Griffiths, K.M., Farrer, L., 2009. Adherence in internet interventions for anxiety and depression: systematic review. J. Med. Internet Res. 11 (2), e13. http://dx.doi.org/10.2196/jmir.1194.

Clark, D.M., 2011. Implementing NICE guidelines for the psychological treatment of depression and anxiety disorders: the IAPT experience. Int. Rev. Psychiatry 23, 318–327. http://dx.doi.org/10.3109/09540261.2011.606803.

Clark, D.M., Wells, A., 1995. A cognitive model of social phobia. In: Heineberg, R.G., Liebowitz, M.R., Hope, D.A., Schneier, F.R. (Eds.), Social Phobia: Diagnosis, Assessment, and Treatment. Guilford Press, NY, pp. 69–93.

Cohen, J., 1988. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. Lawrence Earlbaum Associates, NJ.

Cuijpers, P., Schuurmans, J., 2007. Self-help interventions for anxiety disorders: an overview. Curr. Psychiatry Rep. 9, 284–290. http://dx.doi.org/10.1007/s11920-007-0034-6.

Donker, T., Griffiths, K.M., Cuijpers, P., Christensen, H., 2009. Psychoeducation for depression, anxiety and psychological distress: a meta-analysis. BMC Med. 7 (79). http://dx.doi.org/10.1186/1741-7015-7-79.

El Alaoui, S., Hedman, E., Kaldo, V., Hesser, H., Kraepelien, M., Andersson, E., ... Lindefors, N., 2015. Effectiveness of internet-based cognitive-behavior therapy for social anxiety disorder in clinical psychiatry. J. Consult. Clin. Psychol. Adv. Online Publ. http://dx.doi.org/10.1037/a0039198.

Eysenbach, G., 2005. The law of attrition. J. Med. Internet Res. 7, e11. http://dx.doi.org/10.2196/jmir.7.1.e11.

Furmark, T., Carlbring, P., Hedman, E., Sonnenstein, A., Clevberger, P., ... Andersson, G., 2009. Guided and unguided self-help for social anxiety disorder: randomised controlled trial. Br. J. Psychiatry 195, 440–447. http://dx.doi.org/10.1192/bjp.bp.108.060996.

Gun, S.Y., Titov, N., Andrews, G., 2011. Acceptability of internet treatment of anxiety and depression. Australas. Psychiatry 19, 259–264. http://dx.doi.org/10.3109/10398562.2011.562295.

Haug, T., Nordgreen, T., Öst, L.G., Havik, O.E., 2012. Self-help treatment of anxiety disorders: a meta-analysis and meta-regression of effects and potential moderators. Clin. Psychol. Rev. 32, 425–556. http://dx.doi.org/10.1016/j.cpr.2012.04.002.

Havik, O.E., Monsen, J.T., Høglend, P., Von der Lippe, A.L., Lyngstad, G., Stiles, T., et al., 1995. The Norwegian multisite study for process and outcome in psychotherapy. Protocol Unpublished manuscript, Oslo.

Heck, R.H., Thomas, S.L., Tabata, L.N., 2013. Multilevel and longitudinal modeling with IBM SPSS. Routledge.

Hedman, E., Ljótsson, B., Rück, C., Furmark, T., Carlbring, P., Lindefors, N., Andersson, G., 2010. Internet administration of self-report measures commonly used in research on social anxiety disorder: a psychometric evaluation. Comput. Hum. Behav. 26, 736–740. http://dx.doi.org/10.1016/j.chb.2010.01.010.

Hedman, E., Andersson, G., Ljótsson, B., Andersson, E., Rück, C., Mörtberg, E., Lindefors, N., 2011. Internet-based cognitive behavior therapy vs. cognitive behavioral group therapy for social anxiety disorder: a randomized controlled non-inferiority trial. PloS ONE 6 (3), e18001. http://dx.doi.org/10.1371/journal.pone.0018001.

Hedman, E., Ljótsson, B., Lindefors, N., 2012. Cognitive behavior therapy via the internet: a systematic review of applications, clinical efficacy and cost-effectiveness. Expert Rev. Pharmacoecon. Outcomes Res. 12, 745–764. http://dx.doi.org/10.1586/erp.12.67.

Hedman, E., El Alaoui, S., Lindefors, N., Andersson, E., Rück, C., Ghaderi, A., ... Ljótsson, B., 2014. Clinical effectiveness and cost-effectiveness of internet- vs. group-based cognitive behavior therapy for social anxiety disorder: 4-year follow-up of a randomized trial. Behav. Res. Ther. 59, 20–29. http://dx.doi.org/10.1016/j.brat.2014.05.010.

Heimberg, R.G., Mueller, G.P., Holt, C.S., Hope, D.A., Liebowitz, M.R., 1992. Assessment of anxiety in social interaction and being observed by others: the social interaction anxiety scale and the social phobia scale. Behav. Ther. 23 (1), 53–73. http://dx.doi.org/10.1016/S0005-7894(05)80308-9.

Hesser, H., 2015. Modeling individual differences in randomized experiments using growth models: recommendations for design, statistical analysis and reporting of results of internet interventions. Internet Interv. 2, 110–120. http://dx.doi.org/10.1016/j.invent.2015.02.003.

Horowitz, L.M., Rosenberg, S.E., Baer, B.A., Ureño, G., Villaseñor, V.S., 1988. Inventory of interpersonal problems: psychometric properties and clinical applications. J. Consult. Clin. Psychol. 56, 885–892. http://dx.doi.org/10.1037//0022-006X.56.6.885.

Horvath, A.O., Luborsky, L., 1993. The role of the therapeutic alliance in psychotherapy. J. Consult. Clin. Psychol. 61, 561–573. http://dx.doi.org/10.1037//0022-006X.61.4.561.

Johansson, R., Andersson, G., 2012. Internet-based psychological treatments for depression. Expert. Rev. Neurother. 12, 861–870. http://dx.doi.org/10.1586/ERN.12.63.

Karyotaki, E., Kleiboer, A., Smit, F., Turner, D.T., Pastor, A.M., Andersson, G., ... Cuijpers, P., 2015. Predictors of treatment dropout in self-guided web-based interventions for depression: an 'individual patient data' meta-analysis. Psychol. Med. 1–10 http://dx.doi.org/10.1017/S0033291715000665.

Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E., 2005. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. Arch. Gen. Psychiatry 62, 593–602. http://dx.doi.org/10.1001/archpsyc.62.6.593.

Kringlen, E., Torgersen, S., Cramer, V., 2001. A Norwegian psychiatric epidemiological study. Am. J. Psychiatr. 158, 1091–1098. http://dx.doi.org/10.1176/appi.ajp.158.7.1091.

Lambert, M.J., Ogles, B.M., 2009. Using clinical significance in psychotherapy outcome research: the need for a common procedure and validity data. Psychother. Res. 19, 493–501. http://dx.doi.org/10.1080/10503300902849483.

Lambert, M.J., Christensen, E.R., DeJulio, S.S., 1983. The Assessment of Psychotherapy Outcome. Wiley, NY.

Linden, M., 2013. How to define, find and classify side effects in psychotherapy: from unwanted events to adverse treatment reactions. Clin. Psychol. Psychother. 20, 286–296. http://dx.doi.org/10.1002/cpp.1765.

Mallinckrodt, C.H., Clark, W.S., David, S.R., 2001. Accounting for dropout bias using mixed-effects models. J. Biopharm. Stat. 11 (1–2), 9–21. http://dx.doi.org/10.1081/BIP-100104194.

Mattick, R.P., Clarke, J.C., 1998. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. Behav. Res. Ther. 36, 455–470. http://dx.doi.org/10.1016/S0005-7967(97)10031-6.

Mazumdar, S., Liu, K.S., Houck, P.R., Iii, C.F.R., 1999. Intent-to-treat analysis for longitudinal clinical trials: coping with the challenge of missing values. J. Psychiatr. Res. 33, 87–95. http://dx.doi.org/10.1016/S0022-3956(98)00058-2.

Melville, K.M., Casey, L.M., Kavanagh, D.J., 2010. Dropout from internet-based treatment for psychological disorders. Br. J. Clin. Psychol. 49, 455–471. http://dx.doi.org/10.1348/014466509X472138.

Mendlowicz, M.V., Stein, M.B., 2000. Quality of life in individuals with anxiety disorders. Am. J. Psychiatr. 2000 (157), 669–682. http://dx.doi.org/10.1176/appi.ajp.157.5.669.

Mohr, D.C., Siddique, J., Ho, J., Duffecy, J., Jin, L., Fokuo, J.K., 2010. Interest in behavioral and psychological treatments delivered face-to-face, by telephone, and by internet. Ann. Behav. Med. 40, 89–98. http://dx.doi.org/10.1007/s12160-010-9203-7.

Newman, M.G., Erickson, T., Przeworski, A., Dzus, E., 2003. Self-help and minimal contact therapies for anxiety disorders: is human contact necessary for therapeutic efficacy? J. Clin. Psychol. 59, 251–274. http://dx.doi.org/10.1002/jclp.10128.

Nordgreen, T., Havik, O.E., Öst, L.G., Furmark, T., Carlbring, P., Andersson, G., 2012. Outcome predictors in guided and unguided self-help for social anxiety disorder. Behav. Res. Ther. 50 (1), 13–21. http://dx.doi.org/10.1016/j.brat.2011.10.009.

Ogrodniczuk, J.S., Joyce, A.S., Piper, W.E., 2005. Strategies for reducing patient-initiated premature termination of psychotherapy. Harv. Rev. Psychiatry 13, 57–70. http://dx.doi.org/10.1080/10673220590956429.

Palmqvist, B., Carlbring, P., Andersson, G., 2007. Internet-delivered treatments with or without therapist input: does the therapist factor have implications for efficacy and cost? Expert Rev. Pharmacoecon. Outcomes Res. 7, 291–297. http://dx.doi.org/10.1586/14737167.7.3.291.

Roness, A., Mykletun, A., Dahl, A.A., 2005. Help-seeking behaviour in patients with anxiety disorder and depression. Acta Psychiatr. Scand. 111, 51–58. http://dx.doi.org/10.1111/j.1600-0447.2004.00433.x.

Rozental, A., Andersson, G., Boettcher, J., Ebert, D.D., Cuijpers, P., Knaevelsrud, C., Ljótsson, B., Kaldo, V., Titov, N., Carlbring, P., 2014. Consensus statement on defining and measuring negative effects of internet interventions. Internet Interv. 1 (1), 12–19. http://dx.doi.org/10.1016/j.invent.2014.02.001.

Rummel-Kluge, C., Pitschel-Walz, G., Kissling, W., 2009. Psychoeducation in anxiety disorders: results of a survey of all psychiatric institutions in Germany, Austria and Switzerland. Psychiatry Res. 169, 180–182. http://dx.doi.org/10.1016/j.psychres.2008.10.016.

Shafran, R., Clark, D.M., Fairburn, C.G., Arntz, A., Barlow, D.H., Ehlers, A., ... Wilson, G.T., 2009. Mind the gap: improving the dissemination of CBT. Behav. Res. Ther. 47, 902–909. http://dx.doi.org/10.1016/j.brat.2009.07.003.

Sheehan, D.V., Janavs, J., Harnett-Sheehan, K., Sheehan, M., Gray, C., Lecrubier, Y., et al., 2009. MINI internasjonalt nevropsykiatrisk intervju. Norwegian translation version 6.0.0. Oslo, Helsebiblioteket.

Smit, F., Cuijpers, P., Oostenbrink, J., Batelaan, N., de Graaf, R., Beekman, A., 2006. Costs of nine common mental disorders: implications for curative and preventive psychiatry. J. Ment. Health Policy Econ. 9, 193–200.

Spence, J., Titov, N., Solley, K., Dear, B.F., Johnston, L., Wootton, B., Kemp, A., Andrews, G., Zou, J., Lorian, C., Choi, I., 2011. Characteristics and treatment preferences of people with symptoms of posttraumatic stress disorder: an internet survey. PLoS One 6 (7), e21864. http://dx.doi.org/10.1371/journal.pone.0021864.

Taylor, S., Abramowitz, J.S., McKay, D., 2012. Non-adherence and non-response in the treatment of anxiety disorders. J. Anxiety Disord. 26, 583–589. http://dx.doi.org/10.1016/j.janxdis.2012.02.010.

Tillfors, M., Carlbring, P., Furmark, T., Lewenhaupt, S., Spak, M., Eriksson, A., Ekselius, L., Westling, B., Andersson, G., 2008. Treating university students with social phobia and public speaking fears: internet delivered self-help with or without live group exposure sessions. Depress. Anxiety 25, 708–717. http://dx.doi.org/10.1002/da.20416.

Titov, N., Andrews, G., Schwencke, G., Robinson, E., Peters, L., 2010. An RCT of internet CBT for social phobia with and without motivational enhancement strategies. Aust. N. Z. J. Psychiatry 44, 938–945. http://dx.doi.org/10.3109/00048674.2010.493859.

Verbeke, G., Molenberghs, G., 2009. Linear Mixed Models For Longitudinal Data. Springer.

Wang, P.S., Lane, M., Olfson, M., Pincus, H.A., Wells, K.B., Kessler, R.C., 2005. Twelve-month use of mental health services in the United States: results from the national comorbidity survey replication. Arch. Gen. Psychiatry 62, 629–640. http://dx.doi.org/10.1001/archpsyc.62.6.629.

Wootton, B.M., Titov, N., Dear, B.F., Spence, J., Kemp, A., 2011. The acceptability of internet-based treatment and characteristics of an adult sample with obsessive compulsive disorder: an internet survey. PLoS One 6, e20548. http://dx.doi.org/10.1371/journal.pone.0020548.